



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/628,455

07/29/2003

Hidefumi Abe

030921

4836

38834 7590 12/16/2004

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER

MILLER, PATRICK L

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/628,455

Applicant(s)

ABE ET AL.

Examiner

Patrick Miller

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8-11, 13, 14 and 16 is/are rejected.
- 7) ☒ Claim(s) 4, 7, 12 and 15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03012004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is too long. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claims 4, 6, 12, and 14 are objected to because of the following informalities: see bullet(s). Appropriate correction is required.
 - Claims 1 and 9 recite, “a magneto-sensitive device” (emphasis added; ll. 14 and 13, respectively). Claims 4 and 12 recite, “three magneto-sensitive devices” (lines 4). Claims 6 and 14 recite, “three magneto-sensitive device [sic]” (line 2). Make claims 1 and 9 conform to claims 4 and 12, and 6 and 14 by, for instance, amending to recite, “at least one magneto-sensitive device” or similar.

Double Patenting

3. Applicant is advised that should claims 1-8 be found allowable, claims 9-16 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).
 - The only difference between claims 1 and 9 is a speed reduction means and a speed reducer, respectively. Since the two perform the same function, they are interpreted as the analogous.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 5, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et al (6,346,788).

- With respect to claims 1 and 9, Nagai et al disclose a positioning apparatus comprising: a brushless motor (Fig. 12, #322); a positioning mechanism to position a movable member within a predetermined range (Fig. 2, #18 is moved by #16 and #56); a motor control circuit to rotate the motor by supplying a driving pulse (Fig. 12, #400); the motor control circuit comprises: a driving pulse generating means (Fig. 12, #412 supplies drive pulses via #413); a present stage number detecting means that receives an output signal from at least one magneto-sensitive device (Fig. 12, #415 receives present stage, or position signal, from #405 via #403); and an initialization means that moves the movable member to at least a forward traveling limit or a backward traveling limit within the movable range, so as to set the rotor present stage number as either a forward traveling limit stage number or a backward traveling stage number (col. 11, ll. 10-29, 53-63; when count value is equal to the previously stored end identifying position, the count value, or present stage number is set to whichever traveling limit it is at (clockwise end or counterclockwise end)).

Art Unit: 2837

- Nagai et al do not explicitly disclose a speed reduction means (and speed reducer) that reduces the rotating speed of the motor by reducing the driving pulse when the rotor present stage number is equal to either the forward or backward traveling stage number, respectively. However, Nagai et al do disclose reducing the torque whenever the movable member reaches a position end limit (col. 12, ll. 9-56).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention that when the movable member reaches an end (when the present stage number is equal to an end position), the control circuit (Fig. 12, #400) would reduce the drive pulses sent by #412 to the motor #322. This prevents current from being supplied to the motor when its load can no longer be moved in a first direction. This provides the advantage of preventing the motor from becoming damaged.

- With respect to claims 5 and 13, Nagai et al disclose the magneto-sensitive device is a Hall device (col. 9, ll. 34-37).

5. Claims 2 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et al (6,346,788) as applied to claims 1 and 9 above, and further in view of Strauss et al (5,744,923).

- Nagai et al do not disclose the speed reduction means reducing the speed when the rotor present stage number is less than the forward or backward limits, by at least one.
- Strauss et al disclose a speed reduction means that reduces the speed when the present stage number is at a failsafe position, which is at least one count before the limit, or end stop count. The motivation to reduce the speed before the end

Art Unit: 2837

stop is to prevent the movable member from breaking the actuator coupling (cols. 9/10, ll. 45-67/1-44).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to make the speed reduction means of Nagai et al reduce the speed at a count at least one before the limit, thereby providing the advantage of preventing the actuator and coupling from being damaged, as taught by Strauss et al.

6. Claims 3, 6, 8, 11, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai et al (6,346,788) as applied to claims 1 and 9 above, and further in view of Hill (5,872,434).

- Nagai et al do not disclose the speed reduction means issues a command to reduce the duty ratio of the pulses (claims 3 and 11); at least three magneto-sensitive devices (claims 6 and 14); and the stage number increments when the rotor turns through sixty degrees (claims 8 and 16).
- With respect to claims 3 and 11, Hill discloses a speed reduction means that reduces the duty ratio of the pulses supplied to a brushless dc motor when a control system has determined that the movable member is at a desired set-point (cols. 9/10, ll. 29-34/23-32). The motivation to reduce the duty ratio is provide the advantage of stopping and holding the actuator at the desired position. With respect to claims 6 and 14, Hill discloses a motor control system for a brushless dc motor that uses three magneto-sensitive devices (Fig. 2, #s 48A-C). The motivation to use three magneto-sensitive devices is to more accurately detect motor position (col. 5, ll. 8-19). With respect to claims 8 and 16, Hill discloses

Art Unit: 2837

three magneto-sensitive devices that are spaced 60 degrees apart (Fig. 2, #s 48A-C; col. 8, ll. 11-24; 180 degrees divided by 3 sensors equals 60 degrees apart).

Because the magneto-sensitive devices are 60 degrees apart, this means that the counter would increment when the motor rotor turns 60 degrees. This provides the advantage of more precise positioning.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the system of Nagai et al so that the speed reduction means reduces the duty ratio of the pulse widths supplied to the motor, which provides the advantage of stopping and holding the actuator at the desired position, as taught by Hill. Additionally, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the system of Nagai et al so that it has three magneto-sensitive devices that are spaced apart by sixty degrees, thus making the count value in Nagai et al increment when the rotor turns through sixty degrees. This would provide the advantage of allowing the Nagai et al system to more precisely position the movable member, as taught by Hill.

Allowable Subject Matter

7. Claims 4, 7, 12, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
- With respect to claims 4 and 12, the Prior Art discloses three-magneto sensitive devices, but does not disclose three such devices that are used to determine six control stage numbers for the rotor present stage number.

Art Unit: 2837

- With respect to claims 7 and 15, the Prior Art does not disclose the limitations of claims 1 and 9, respectively, where the movable member is a gear ratio determining member of an automatic transmission of a vehicle.

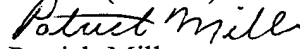
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Patrick Miller
Examiner
Art Unit 2837

pm
December 12, 2004


DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800